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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Charles M Ward-Close

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EXAMINER

KESSLER, CHRISTOPHER S

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/529,234	<b>Applicant(s)</b> WARD-CLOSE ET AL.	
	<b>Examiner</b> CHRISTOPHER KESSLER	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 31-61 is/are pending in the application.
- 4a) Of the above claim(s) 32,34,35,44 and 46-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 31,33,36-43,45 and 51-61 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/13/08; 10/14/08</u> .                                       | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

1. Responsive to the amendment filed 14 October 2008, claims 31, 37, 40, and 41 are amended and claims 51-61 are added. Claims 31, 33, 36-43, 45, and 51-61 are currently under examination.

### ***Status of Previous Rejections***

2. Responsive to the amendment filed 14 October 2008, new grounds of rejection are presented.

### ***Information Disclosure Statement***

3. Documents listed in multiple IDS have been crossed off. The document(s) have been considered, but will not be cited twice. Foreign document(s) with no English abstract available have been crossed off the IDS and have not been considered.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 31 and 51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 31 recites the limitation "the contaminating impurities" in lines 6-7. There is insufficient antecedent basis for this limitation in the claim.

Claim 51 recites the limitation "the powder." There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 31, 33, 36-40, 42, 43, 45, 51, 52 and 54-61 are rejected under 35 U.S.C. 102(b) as being anticipated by UK Patent Application GB 2 121 441 A (hereinafter "Down").

Regarding claim 31, Down teaches the invention as claimed. Down teaches a method of upgrading metal powder (see title, abstract). Down teaches that the method is used to purify metal particles made by an electrochemical process (see p. 1, l. 45-75). Down teaches that the metal particles contain impurities as a result of the electrochemical process (see p. 1, l. 45-75), as is known in the art of titanium synthesis. Down teaches that the metal particles are introduced into a heat source, such that the particles are allowed to free fall through the heat source (see pp. 2-3 and Fig. 1). Down teaches that the metal is melted (see p. 2, l. 67-94), thus meeting the limitation of at a

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temperature equal to or higher than the melting point. Down teaches that at least some of the contaminating impurity is vaporized by the heat source (see p. 2, l. 67-94). Down teaches that the vaporized impurities are removed from the vicinity of the particles (see p. 2, l. 50-66). Down teaches that the purified metal particles are cooled and collected in solid form (see pp. 2-3).

Regarding claim 33, Down teaches that the particles comprise a powder that is commercially available (see p. 1, l. 101-127).

Regarding claim 36, Down teaches that the heat source is a plasma torch (see pp. 1-2).

Regarding claim 37, Down teaches separate collection means for impurities and metal particles (see p. 2).

Regarding claim 38, Down teaches that the particles free fall within the heat source (see pp. 2-3 and Fig. 1).

Regarding claim 39, Down teaches that the chamber can be air cooled in order to allow the particles to solidify (see p. 2, l. 108-p. 3, l. 23).

Regarding claim 40, Down teaches that the plasma torch sweeps away the gaseous contaminants (see p. 2, l. 50-94 and Fig. 1).

Regarding claim 42, Down teaches that the metal is melted, but is not evaporated (see p. 1, l. 76-116), thus meeting the limitation of above the melting point but below the boiling point.

Regarding claim 43, Down teaches that the metal is titanium (see p. 1).

Regarding claim 45, Down teaches that the impurities comprise magnesium (see p. 1, l. 101-116).

Regarding claim 51, Down does not teach that the particle size is within the range of up to about 1 mm in diameter. However, down teaches that the powder is “finely divided” titanium made by the Kroll or Hunter process (see p. 1). Thus, Down teaches a powder that defines the claimed particle size with sufficient specificity to anticipate the claim. Applicant is further directed to MPEP 2131.03.

Regarding claim 52, Down teaches that the metal particles are finely divided (see p. 1, l. 101-126), thus meeting the limitations of finely-sized.

Regarding claim 54, Down teaches that the particles are blown through a plasma torch (see pp. 1-2).

Regarding claim 55, Down teaches that the particles are heated, melted and substantially resolidified out of contact with any surfaces (see pp. 1-2).

Regarding claim 56, Down teaches that the atmosphere is controlled (see p. 2, l. 26-41).

Regarding claim 57, Down teaches that the particles may be further washed with acid or water (see p. 2, l. 108-p.3, l. 22). Though Down does not explicitly describe drying, this step would have been inherent in the washing process in order to use the particles after the washing. Applicant is further directed to MPEP 2112.01.

Regarding claim 58, Down teaches that the apparatus comprises a heat source and separate means for collecting impurities and metal (see Fig. 1).

Regarding claim 59, Down teaches that the metal particles are spheroidized by the treatment as well as purified (see p. 1, l. 76-116).

Regarding claim 60, Down does not teach that the concentration of contaminating impurities is less than 50 ppm. However, this feature would have been inherent in the process, as the similar material treated similarly must inherently have the same properties. Applicant is further directed to MPEP 2112.01. Further, Down teaches that the starting material may comprise impurities as low as several hundred ppm for removal, and can remove "trace contaminants" (see p. 3, l. 24-48).

Regarding claim 61, Down does not teach that the concentration of contaminating impurities is less than 10% of their initial concentration. However, this feature would have been inherent in the process, as the similar material treated similarly must inherently have the same properties. Applicant is further directed to MPEP 2112.01. Further, Down teaches that the starting material may comprise impurities as high as 0.15 wt% or even higher for removal, and can remove "trace contaminants" (see p. 3, l. 24-48).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Down.

Regarding claim 41, Down does not teach that the impurities are collected on cold collector plates. Down does not specify what means are used to collect the vaporized impurities, only describing that they are removed separately from the particles. The Examiner takes Official Notice that the use of cold collector plates is well known in the art and would have been obvious to one of ordinary skill in the art as a suitable collection means. Applicant is further directed to MPEP 2144.03.

10. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Down in view of US Patent 6,452,140 issued to Motokawa et al. (hereinafter "Motokawa").

Regarding claim 53, Down does not teach that the particles are suspended in mid-air.

Motokawa teaches a method of melting utilizing a dummy micro-gravitational field by magnetic force (see Abstract, cols. 2-3). Motokawa teaches that this method yields material in a spherical shape with excellent smoothness due to surface tension forces as the particles are suspended in mid-air (see cols. 2-3).

It would have been obvious to one of ordinary skill in the art at time of invention to have used the levitation melting method of Motokawa in the melting purification of Down, in order to generate particles with spherical shapes with excellent smoothness, as taught by Motokawa.

### ***Response to Arguments***



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11. Applicant's arguments with respect to claim 31 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER KESSLER whose telephone number is (571)272-6510. The examiner can normally be reached on Mon-Fri, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

csk